

Figure 1

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UNIT PRICE CATALOG					Location Factor: 0.94		MASTER [BASELINE] RCM	
© 2002 Project Planning & Management, Inc.					Sales Tax: 6.0%		Berrien City, MI	
					Ave Sub Gen'l Conditions: 2%		Cost Adjustments	
System	Description	Base Unit Cost	Adjusted Unit Cost	Unit	Loc_Fctr	S_Tax	Sub_GC	
col_sprd_ftg	3000 PSI concrete							
1.	forms, rebar, concr, placing, finish	\$204.00	\$201.35	CY	0.94	3%	2%	
sprd_ftg	3000 PSI concrete							
1	Not Req'd (Trench Footing)	\$0.00	\$0.00	LF				
2	12" thick x 18" wide; forms, reinf, direct chute	\$12.06	\$11.90	LF	0.94	3%	2%	
3	12" thick x 24" wide; forms, reinf, direct chute	\$13.71	\$13.53	LF	0.94	3%	2%	
4	(For Precast Foundations) 12" thick x 24" wide; 3/4" stone bedding	\$2.22	\$2.19	LF	0.94	3%	2%	
fdn_drain								
1	PVC 4" dia; gravel drain bed	\$4.00	\$3.95	LF	0.94	3%	2%	
2	PVC 6" dia; gravel drain bed	\$5.00	\$4.94	LF	0.94	3%	2%	
fdn_wall	4' high foundation wall							
		(deduct of 4*\$0.70 eliminates 1" rigid insul)						
1	Poured-8"; bitum/damp; sill plates	\$20.44	\$20.17	LF	0.94	3%	2%	
2	Poured-10"; bitum/damp; sill plates	\$23.60	\$23.29	LF	0.94	3%	2%	
3	Poured-10"; brickledge; bitum/damp; sill plates	\$31.16	\$30.75	LF	0.94	3%	2%	
4	Poured-12"; bitum/damp; sill plates	\$26.08	\$25.74	LF	0.94	3%	2%	
5	Poured-12"; brickledge; bitum/damp; sill plates	\$33.64	\$33.20	LF	0.94	3%	2%	
6	Block-8", grouted; bitum/damp; parging; sill plates	\$37.84	\$37.35	LF	0.94	3%	2%	
7	Block-10", grouted; bitum/damp; parging; sill plates	\$42.44	\$41.89	LF	0.94	3%	2%	
8	Block-12", grouted; brickledge; parging; bitum/damp; sill plates	\$47.28	\$46.67	LF	0.94	3%	2%	
9	Pre-Cast Wall System, bitum/damp; sill plates	\$22.80	\$22.50	LF	0.94	3%	2%	
10	ICF (Insulated Concrete Foundation); sill plates	\$32.70	\$32.28	LF	0.94	3%	2%	
11	Trench footing/grade beam; 12" poured/reinf; earth formed; no insul	\$21.76	\$21.48	LF	0.94	3%	2%	
12	Wood 2x8; 16"OC; CDX sheathing; vapor; 9" insul R-30	\$24.04	\$23.73	LF	0.94	3%	2%	

Figure 2

01 Foundation

☐ Sand/Gravel Soil ☐ Sand/Clay Soil ☐ Problem Soils (e.g., water; low soil bearing capacity)

021 Slab on Grade

☐ 4" thick (standard) ☐ 5" thick ☐ 6" thick

☐ No Basement ☐ Crawlspace

☐ Full Basement ☐ Partial Bsmt (some of Ground Floor living area on slab)

Wall Material ☐ Poured concrete ☐ Concrete block/parging ☐ Wood foundation
☐ "Superior" Precast Foundation Wall System w/1" insulation

Waterproofing ☒ Standard Protection ☐ Premium Protection

Insulation ☐ None ☐ 1" Rigid (R-5) ☐ 2" Rigid (R-10) ☐ 3" Rigid (R-15)* (recommended)
*Energy Star

031 Floor Construction

- 1** Composition "I" Joists
(Standard spans to 24')
* 1" x 3" Ceiling furring not required
- 2** Dimension lumber (e.g. 2x12)
(Standard spans to 19')
* Material readily available
- 3** Truss Joists
(Standard spans to 24')
* Utilities easily pass through



House	<input type="checkbox"/>	SIP / Timber Frame
Garage	<input type="checkbox"/>	SIP / Glu Lam Ridge Beam
Dormers	<input type="checkbox"/>	SIP

SIP Thickness ☐ SIP Not Used
☐ 4.5" OSB/OSB (R-18)

SIP Interior Finish ☐ 1/2" Gypsum Board

<input type="checkbox"/> Prefab trusses	<input type="checkbox"/> Dimensional lumber (e.g. 2x10)
<input type="checkbox"/> Prefab trusses	<input type="checkbox"/> Dimensional lumber (e.g. 2x10)
<input type="checkbox"/> Dimensional lumber (e.g. 2x8)	

<input type="checkbox"/> 8.25" OSB/OSB (R-34)	<input type="checkbox"/> 10.25" OSB/OSB (R-42)
<input type="checkbox"/> 6.5" OSB/OSB (R-27)	<input type="checkbox"/> 12.25" OSB/OSB (R-45)

☐ Tongue & Groove "T&G" (pine or cedar)

Basement Stair ☐ Basement stairs, open riser

<input type="checkbox"/>	Pine treads/risers, box stairs, WALLS 2 SIDES/handrail only
<input type="checkbox"/>	Pine treads/risers, box stairs, balusters/handrail, newel post

Ground Floor Stair

<input type="checkbox"/>	Pine treads /-risers (pine), box stairs, balusters/handrail, newel post	
<input type="checkbox"/>	Hardwood treads / risers, box stairs, WALLS 2 SIDES, balusters/handrail, newel post	
<input type="checkbox"/>	Hardwood treads / risers, box stairs, balusters/handrail, newel post	
<input type="checkbox"/>	Curved stairway (hardwood), open 1 side	<input type="checkbox"/> Curved stairway (hardwood), open 2 sides

Auxiliary Stair ☐ None ☐ Attic stair; folding; pine; 8'-6"
☐ Pine treads / risers (pine), box stairs, handrail, newel post ☐ Spiral stairs, oak
☐ Hardwood treads / risers, box stairs, handrail, newel post ☐ Spiral stairs, metal

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ZIP CODE	CITY	STATE	Regional Adjustment Factor	Winter Design Temp		Deg Days	Deg Days	Sales Tax	Sub GC	Escalation
				99%	97.5%	Heating DD	Cooling DD	Tax Rate	2%	1.50%
35000	Cullman	AL	0.85	17	21	2,823	1,881	4%		
35200	Birmingham	AL	0.86	17	21	2,823	1,881	4%		

Figure 4

ENERGY MODEL				MASTER [BASELINE] RCM	
© 2012 Project Planning & Management, Inc.				TOTAL FINISHED AREA (TFA): 4,778 SF TOTAL CONSTRUCTED AREA: 8,358 SF	
Enter:	State	Residential Energy Code	State Mandate	Comments	
MI	Michigan	Michigan Uniform Energy Code Part 10 Rules, less stringent than 1992 MEC	Yes	Prior to June 22, 1977, the state of Michigan had no building energy efficiency requirements. On July 27, 1985, the state adopted ANSI/ASHRAE/IES Standard 90A-1980 statewide. SB 719, signed in early January 1986, repealed the 1995 adoption of the 1993 MEC. The legislation directed the state construction code commission to, by April 1, 1997, provide cost-effective standards and establish a program to provide home buyers with energy rating information. The Michigan Uniform Energy Code Part 10 Rules were adopted March 31, 1999.	

Envelope Heat Loss	Area (SF)	R-Value	U Factor	Delta T	Heat Loss (BTUH)
Heat Loss-Basement Walls	1,821	6	0.16	22	6,369
Heat Loss-Basement Floor (or Ground Fir Slab)	3,133	25	0.04	22	2,814
Heat Loss-Walkout Wall	1,500	14	0.07	69	7,555
Heat Loss-Walls	440	14	0.07	69	2,206
Heat Loss-Windows (low-E) Default (R-3)	535	3	0.33	69	13,455
Heat Loss-Windows Standard Glazing (R-2)	0	2	0.50	69	-
Heat Loss-Windows (low-E) Triple Glaze (R-5)	0	6	0.17	69	-
Heat Loss-Doorwalls	126	3	0.33	69	2,898
Heat Loss-Doorwalls	0	3	0.33	69	-
Heat Loss-Doors	84	5	0.20	69	1,159
Heat Loss-Roof SIP (on Timber)	1,203	36	0.03	69	2,439
Heat Loss-Roof SIP (on SIP)	0	0	0.00	69	-
Heat Loss-Attic (Uninsulated Roof Rafter)	547	16	0.06	69	2,383
Heat Loss-Skylights	0	3	0.33	69	-
Building Envelope Heat Loss					41,268 BTUH

Envelope Tightness	Select >	ACH (Air Changes / Hour)	Design Occupancy:
4 Energy Star Very Tight	0.25	ACH (Air Changes / Hour)	5

Infiltration / Ventilation	CFM	ACH	Constant	Volume	Delta T	Heat Loss (BTUH)
Natural Infiltration	303	0.25	1.08	72,764	69	22,593
Mechanical Ventilation w/AALX	424	0.35	1.08	72,764	18	8,251
75% AALX Efficiency	141.09	Min Target CFM				

Envelope + Infiltration Heat Loss = 72,113 BTUH		Furnace AFUE = 90%		Furnace Size = 80,126 BTUH		O = Degree Days = 6,439 Berrien City, MI		T = Temp diff = 69 degrees		V = Fuel value = 1,052 BTUH per cu ft natural gas		V = Fuel value = 91,743 BTUH per Gallon propane		V = Fuel value = 3,413 BTUH per KWH electric		CF1 = 1.35 Correction factor that includes the effects of rated full load efficiency, part load performance, over sizing and energy conservation devices.		CF2 = 0.71 Empirical correction factor for heating effect versus 65 degrees F degrees-days.		E = Annual Energy Consumption = 164,715 cu ft natural gas		1,809 gallons of propane		KWH of electricity (100% Efficiency)		Annual Heating Cost = \$955.35 NGAS		Annual Heating Cost = \$1,794.32 PROPANE		Annual Heating Cost = \$0.00 ELECTRIC	

72,113 Total BTUH Demand		1.4 Furnace Sizing Factor		127,000 Furnace Size at 80%		Meets Energy Star:		113,000 Furnace Size at 90%		108,000 Furnace Size at 94%		101,000 Furnace Size at 100% (ELECTRIC)	

Natural Gas		10 therms (10mcf) = 1,000,000 BTU's		Electricity		293 KWH = 1,000,000 BTU's		Propane		10.9 Gallons = 1,000,000 BTU's		Heating Oil		7.21 Gallons = 1,000,000 BTU's	

Natural Gas		10 therms (10mcf) = 1,000,000 BTU's		Electricity		293 KWH = 1,000,000 BTU's		Propane		10.9 Gallons = 1,000,000 BTU's		Heating Oil		7.21 Gallons = 1,000,000 BTU's	

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HOME SPECIFIC QUALITY / COST SELECTIONS				MASTER [BASELINE] RCM		P21		BASELINE	
237 System Selections				TOTAL FINISHED AREA: 4,778 SF		Berrien City, MI			
© 2002 Project Planning & Management, Inc.				TOTAL CONSTRUCTED AREA: 8,358 SF		4 Bedroom, 5 Bath			
SUBSYSTEM				quan	unit	unit \$	total \$	TOTAL	Savings
011 Standard Foundations									
011.10	Spread footings (timber columns)	1	12" thick-30"x30"; forms, rebar, concrete	9	NCOLS	\$46.61	\$419	\$419	\$0
011.10	Spread footings (ally columns)	1	12" thick-30"x30"; forms, rebar, concrete	5	EA	\$46.61	\$233	\$233	\$0
011.20	Spread footings (foundation walls)	4	12" thick x 24" wide; forms, reinf, direct chute	43	LF	\$13.53	\$582	\$582	\$0
011.20	Spread footings (basement walls)	5	12" thick x 24" wide; forms, reinf, direct chute, PVC 6" gravel drained	352	LF	\$18.47	\$6,506	\$6,506	\$0
011.30	Foundation Wall (4' high)	1	Poured-8"; bitum/damp; sill plates	230	LF	\$20.17	\$4,640	\$4,640	\$0
011.40	Excavation Foundation Wall Footing	2	4' depth spread 1/2 excav, sand/gravel, backfill; no compactn; rough grade	345	SF	\$0.39	\$136	\$136	\$0
012 Special Foundations				345	SF	\$0.00	\$0	\$0	\$0
021 Slab on Grade									
021.00	Ground Floor Slab on Grade	3	Not Used	0	SF	\$0.00	\$0	\$0	\$0
021.00	Garage Floor Slab on Grade	1	4" slab w/4" gravel base; 6 mil vap, expan matl; W1.4/W1.4; steel trowel fnis	864	SF	\$2.69	\$2,328	\$2,328	\$0
021.00	Basement Slab on Grade	3	4" slab w/4" gravel base; 6 mil vap; expan matl; W1.4/W1.4; steel trowel fnis	3,198	SF	\$2.69	\$8,617	\$8,617	\$0
021.10	Basement Slab Insulation	1	Not Used	0	SF	\$0.00	\$0	\$0	\$0
022 Excavation: Basement				1,066	CY	\$6.74	\$6,125	\$6,125	\$0
022.00	Off Site Trucking	1	Assumes off-site hauling NOT required (Assumes on site placement of spoils)	0	CY	\$0.00	\$0	\$0	\$0
023 Basement Walls				1,821	BWA	\$5.30	\$9,643	\$9,643	\$0
023.00	Partial Height Basement Wall Framing	1	Not Used	0	BWA	\$0.00	\$0	\$0	\$0
023.10	Basement Wall Insulation	1	None	1,821	BWA	\$0.00	\$0	\$0	\$0

Baseline Selections

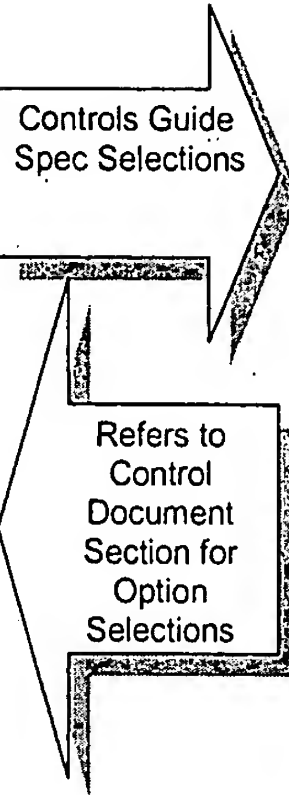
HOME SPECIFIC QUALITY / COST SELECTIONS				MASTER [BASELINE] RCM		P21		BASELINE	
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011.20	Spread footings (foundation walls)	4	12" thick x 24" wide; forms, reinf, direct chute	43	LF	\$13.53	\$582	\$582	\$0
011.20	Spread footings (basement walls)	5	12" thick x 24" wide; forms, reinf, direct chute, PVC 6" gravel drained	352	LF	\$18.47	\$6,506	\$6,506	\$0
011.30	Foundation Wall (4' high)	1	Poured-8"; bitum/damp; sill plates	60	LF	\$23.17	\$1,390	\$1,390	\$0
011.40	Excavation Foundation Wall Footing	2	4' depth spread 1/2 excav, sand/gravel, backfill; no compactn; rough grade	195	SF	\$0.39	\$77	\$136	(\$59)
012 Special Foundations				195	SF	\$0.00	\$0	\$0	\$0
021 Slab on Grade									
021.00	Ground Floor Slab on Grade	3	Not Used	0	SF	\$0.00	\$0	\$0	\$0
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021.10	Basement Slab Insulation	1	Not Used	0	SF	\$0.00	\$0	\$0	\$0
022 Excavation: Basement				1,066	CY	RESELECT	VALUE	\$6,125	VALUE
022.00	Off Site Trucking	1	Assumes off-site hauling NOT required (Assumes on site placement of spoils)	0	CY	\$0.00	\$0	\$0	\$0
023 Basement Walls				3,171	BWA	\$5.30	\$16,792	\$9,643	\$7,149
023.00	Partial Height Basement Wall Framing	1	Not Used	0	BWA	\$0.00	\$0	\$0	\$0
023.10	Basement Wall Insulation	1	None	3,171	BWA	\$0.00	\$0	\$0	\$0

Alternate Selections illustrating self documenting line item changes to component costs and Self-Correcting feature (Line 022 Basement Excavation) wherein "ERROR" was triggered when "Walkout Basement" was deselected in '40' Design Characteristics, requiring selection of Full Basement excavation options.

Figure 6

**Residential Cost Estimation
Construction Summary
"Component Options"**

- **Control Document** that provides outline construction descriptions of the building systems as selected by the Owner.
- **Serves a similar purpose as site and engineering drawings would provide** in that scope and construction requirements are called out for site, structural, mechanical, electrical and plumbing systems.
- Controls which material options are to be selected in cases where options exist in the guide spec sections.



**Guide Specifications
CSI MASTERFORMAT
Divisions 1-16**

- **Detailed Guide Specifications including all 16 CSI Divisions**
 - Division 1 - General Requirements
 - Division 2 - Site Construction
 - Division 3 - Concrete
 - Division 4 - Masonry
 - Division 5 - Metals
 - Division 6 - Wood And Plastics
 - Division 7 - Thermal And Moisture Protection
 - Division 8 - Doors And Windows
 - Division 9 - Finishes
 - Division 10 - Specialties
 - Division 11 - Equipment
 - Division 12 - Furnishings
 - Division 13 - Special Construction
 - Division 14 - Conveying Systems
 - Division 15 - Mechanical
 - Division 16 - Electrical

Figure 7